



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,032	07/31/2003	Tirdad Sowlati	051933-1090	9657
24504	7590	05/19/2005	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			SHINGLETON, MICHAEL B	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,032

Applicant(s)

SOWLATI

Examiner

Michael B. Shingleton

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on February 24, 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-44 is/are allowed.
- 6) ☒ Claim(s) 1 and 5-7 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 and 7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Koyama et al. 5,384,501 (Koyama).

Figure 3 of Koyama and the relevant text discloses a variable gain amplifier system (See columns 6 and 7) having a degeneration element 18 coupled to the differential pair of transistors 11, 12 and a collector load 23 that is of a “similar type” to the degeneration element. Note that element 18 and element 23 are both FETs and therefore are “of a similar type”. The collector load is clearly shown a coupled to the differential pair of transistors. The gain of the amplifier is clearly a function of both the degeneration element 18 and the collector load 23. For a differential input control voltage equal to zero i.e. the voltage applied to element 23 at node 24, it is an inherent characteristic that the physical dimension ratio of the collector load to the degeneration element “determines the gain” (See column 7 around line 63). The voltage at the node 24 qualifies as a “differential input control voltage” for its value controls the gain of the differential arrangement as is clearly recited above. The differential input control voltage of is clearly derived from a single ended voltage and a “bandgap voltage” for the differeinatial input voltage of Koyama is a single ended voltage and it inherently must be derived from a “bandgap voltage”, i.e. threshold voltage in order for the differential voltage to control the FETs 18 and 23 otherwise the recited control would not be occur.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. 5,384,501 (Koyama).

Koyama as applied above and the following: Claim 5 and 6 recite a "second variable gain amplifier" having the same structure as the first with a substantially constant gain when the second differential input control voltage is equal to zero volts. No connection between the first and second variable gain amplifiers is claimed. Thus, clearly Koyama is not limited to a single copy of the variable gain amplifier. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form more than one copy of the variable gain amplifier of Koyama. Also it is well known to form a cascade arrangement of variable gain amplifiers so as to adjust the gain over a wider range. Thus it also would have been obvious to one of ordinary skill in the art at the time the invention was made to have made a cascade arrangement of the variable amplifiers of Koyama so as to adjust the gain over a wider range. Note that in the invention made obvious above with the two differential input control voltages equal to zero volts that the gain of these amplifiers are "substantially constant".

Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8-44 are allowed.

Conclusion

Applicant's arguments filed February 24, 2005 have been fully considered but they are not persuasive. Applicant argues that the functional language of claim 1 does "not flow from the teachings of Koyama". The examiner respectfully disagrees. In support of applicant's belief applicant states: "For example, the circuit shown in Figure 3 of Koyama is a known circuit (sometimes referred to as a back-gating technique), in which the substrate in the FET acts as a second gate which changes the threshold voltage of device 23 compared to device 18. Thus, the resistance is not inherently the ratio of the dimensions, since such an assertion fails to consider the substrate. It is also worthy to note that when the gate of device 18 is being increased, the gate of device 23 must be decreased in the opposite direction. Having different source-substrate voltages in device 18 compared to device 23 makes the change different between the two voltages, which is very difficult to realize exactly or precisely. Thus, Koyama does not disclose, teach, or suggest "wherein a gain of the variable gain amplifier is determined by a physical dimension ratio of the collector load to the degeneration element for a differential input control voltage equal to zero volts," as recited in independent claim 1." Applicant does not provide support in Koyama for the belief that "For example, the circuit shown in Figure 3 of Koyama is a known circuit (sometimes referred to as a back-gating technique), in which the substrate in the FET acts as a second gate which

Art Unit: 2817

changes the threshold voltage of device 23 compared to device 18". Furthermore, Applicant does not identify what FET this passage is referring to. The examiner has reviewed the Koyama reference and cannot find a passage that the substrate is a "second gate" that changes the threshold voltage of device 23 compared to device 18. Also given applicant's reasoning then the FETs 861 and 849 of applicant's invention would have the same effect. Note that the claim is of such a breadth that the differential input control voltage being the input signal applied to the differential pair of transistors or the voltage applied to the element 23 at node 24 (zero or some set value) and the "physical dimension" (Which could be anything.) would result in the a particular gain. The "physical dimension ratio" would be a factor in determining the gain and it would be impossible for applicant to state that this is the only factor determining the gain. Applicant also states that "It is also worthy to note that when the gate of device 18 is being increased, the gate of device 23 must be decreased in the opposite direction.". Again applicant has not been able to point out where in the disclosure of Koyama that this alleged function is recited. How this relates to the claimed invention is unclear, as the claimed invention does not seem to exclude this and even if this was true the gain is in some form would be determined by the "physical dimension ratio". Again the claims are not limited to the gain only being determined by the unspecific "physical dimension ratio". Many other factors in Applicant's own invention determines the gain like temperature, etc. and thus a fair and reasonable reading of applicant's invention would be one that does not limit the claimed invention to an impossibility. Also applicant's conclusion "Thus, the resistance is not inherently the ratio of the dimensions, since such an assertion fails to consider the substrate." not only fails for the reasons above, it fails for it is unclear what "resistance" applicant is talking about. Claim 1 does not mention "the resistance" and thus claim 1 is not so limited as applicant apparently suggests. Also given that there is no structural difference recited in claim 1 compared to that of the Koyama reference the Koyama reference is seen as anticipating the claimed structure (Note MPEP 2114 as will be discussed in more detail below.). In light of MPEP 2114 Applicant is requested to point out what Applicant believes the structural difference(s) are between the claimed invention and that of the prior art. Applicant also discusses the functional language of claim 7 and concludes that the prior art reference does not "disclose" this functional language. The examiner respectfully disagrees. Claim 7 states: "wherein the differential input control voltage is derived from a single ended voltage and a bandgap voltage". There is simply no structure claimed that can enable this recited function and thus this claim is taken as a very broad claim. As the claimed structure is the same as that of the prior art, the recited function of claim 7 is seen as being covered. Support for this can be found in MPEP 2114 where it is clear that claims to an apparatus must be distinguished from the prior art in terms of structure rather than function. However, just like that of

Art Unit: 2817

claim 1 the structure of Koyama is fully capable of providing the function of claim 7. As stated in the previous Office action when one reads the differential input control voltage as the single ended voltage applied at node 24, this single ended voltage is derived from a single ended voltage, i.e. the single ended voltage from the unshown control unit or circuit that produces the voltage that is to be sent to node 24. This voltage has to be of some value that can cause the device to function. In other words, the voltage cannot be directed to only a range of values that the recited function cannot occur. The range of values has to be derived with respect to a "bandgap voltage" i.e. a threshold voltage, in order for the device of Kayama to function. One has to take into consideration the "bandgap" voltage when coming up with the range of differential input control voltages. This is all that is required by the claim that the bandgap voltage be considered. This fact is further emphasized by the fact that applicant has not provided for any specific equation relating the differential input control voltage to single ended voltage and a bandgap voltage. The claims are just not so limited as applicant appears to suggest. Applicant argues the patentability of claims 5 and 6 rests on the arguments presented for claim 1 and according to these argument(s) fail for the same reasons as presented above.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

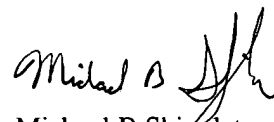
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/632,032
Art Unit: 2817

Page 6

MBS
November 04, 2004
May 10, 2005


Michael B Shingleton
Primary Examiner
Group Art Unit 2817